

Status of Cosmic Tracking for Pixel EndCapA Cosmic Test

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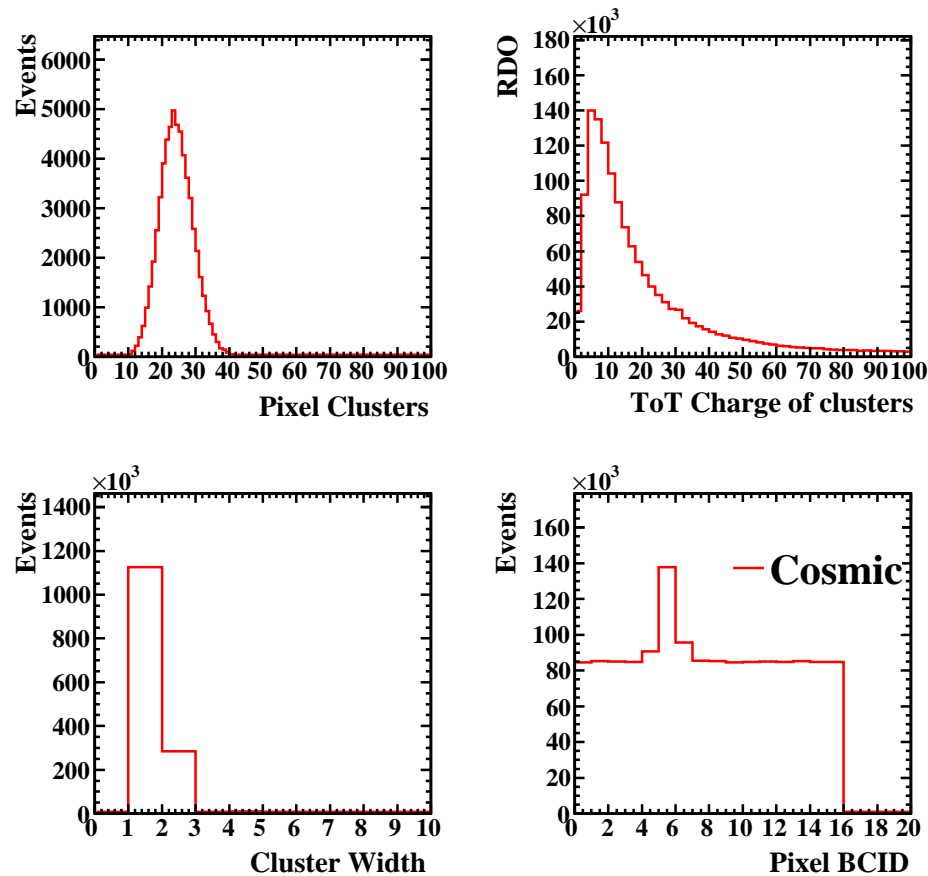
- Cosmic Reconstruction
- Detector Performances Studies with Cosmic tracking
- Conclusion



Cosmic Reconstruction

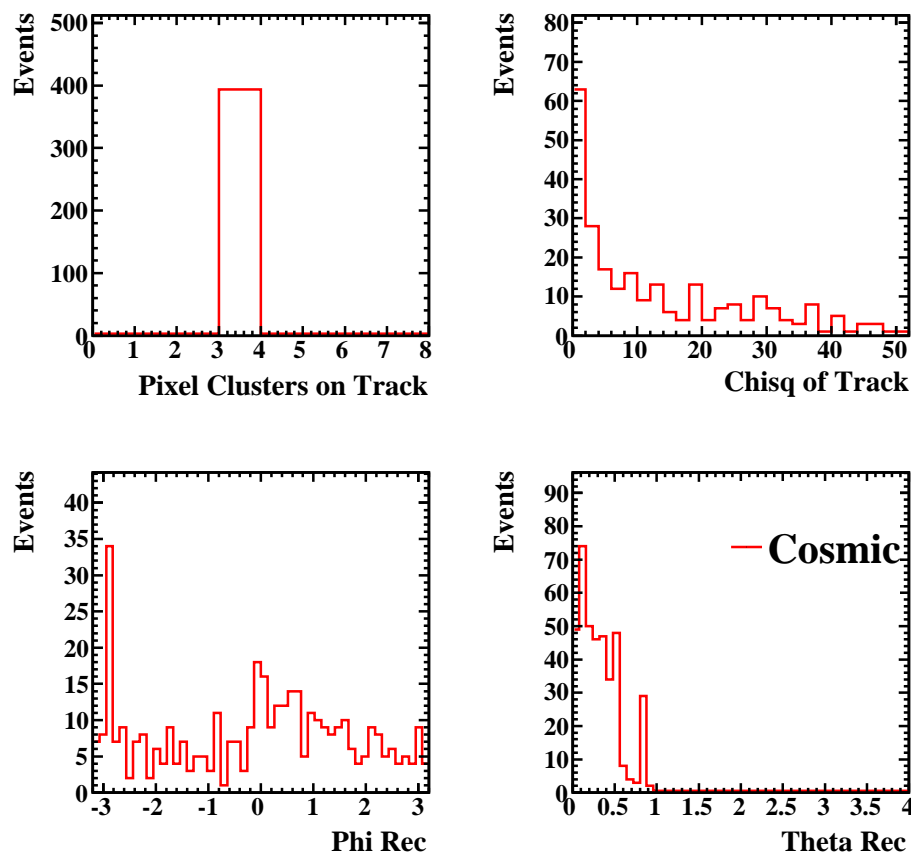
- Use release 12.3.0 plus the fixes for Pixel Endcap cosmic simulation
- Took advantage of the existing software for CTB tracking and modified few packages for pixel tracking.
- Tracking strategies are simple:
 - Finding 3-hits track from three separate disk first
 - Search for overlap hits from the neighbor modules from each disk
 - Do a line fit in x-z and y-z with $\chi^2 < 25/\text{dof}$
 - Do SiCTBAmbSolver and choose the best candidates
- CBNT ntuples output for pixel, clusters, and tracking information, but the association does not seem exist, needs improvement.
- Wiki needs to update shortly at <https://uimon.cern.ch/twiki/bin/view/Atlas/HowToRunPixelEndCapCCosmicReconst>

Pixel Cluster Charge, Width and BCID (Data)



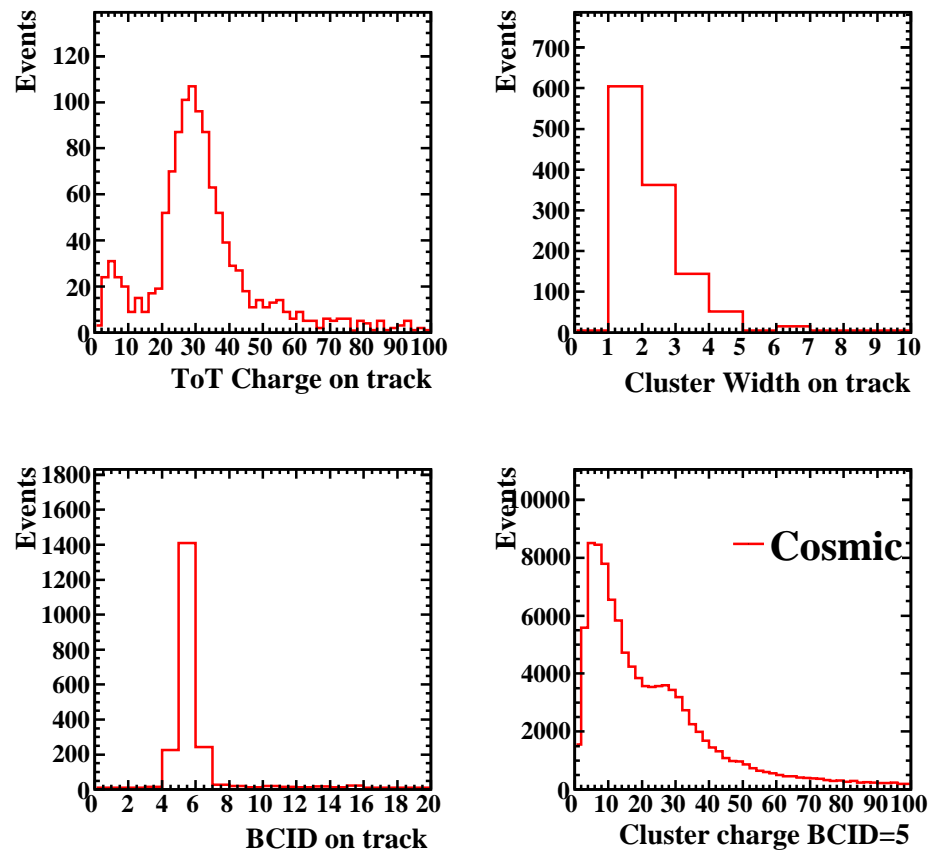
- 60k events in run 1125, gives 65 hits found.
- ToT seems a long tail...

Tracking Distributions (Data)



- Tracking rate is about $(0.67 \pm 0.03)\%$, too low ?, no overlaps ?
- The phi and theta distribution seems reasonable.

Pixel Clusters On Track (Data)



- A nice Landau peak is evident ...
- The width and BCID are consistent from cosmic tracks
- BCID in time is very useful to removal the noise hits.

Conclusion

- Congratulations to the whole pixel system test crew !
- Preliminary results on run 1125 look promising
- The charge of clusters attached on the track shows clear Landau peak near 25
- The width and BCID are consistent with cosmic tracks
- The tracking rate is about 0.6%...